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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
STADLER, REBECCA M	

ART UNIT	PAPER NUMBER
1754	

DATE MAILED: 09/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/601,234	WEST ET AL.	
	Examiner	Art Unit	
	Rebecca M. Stadler	1754	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 June 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 June 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a.) As to claim 3, the phrase "static mixer blades" is unclear. If a blade is static, it would not mix. It appears that baffle is meant, especially in view of the specification, which describes a baffle.

Where applicant acts as his or her own lexicographer to specifically define a term of a claim contrary to its ordinary meaning, the written description must clearly redefine the claim term and set forth the uncommon definition so as to put one reasonably skilled in the art on notice that the applicant intended to so redefine that claim term. *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357, 52 USPQ2d 1029, 1033 (Fed. Cir. 1999).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 4, 6, 9 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Iijima 5,364,611.

As to claim 1, Iijima '611 discloses a method for producing a hydrate comprising the steps of: delivering CO_2 (a hydrate-forming species) to a pressurized, temperature controlled, continuous flow-reactor (see Abstract, lines 1-5 and lines 5-8 and column 6, lines 21-23 for

"continuous"); delivering water to the reactor (see Abstract, lines 3-5); and mixing the CO_2 with the water in the reactor until a hydrate is formed (see column 2, lines 39-41. Of note, no difference is seen as between the CO_2 hydrate of Iijima '611 and the consolidated hydrate/fluid/water stream. As such, Iijima teaches all of the limitations of claim 1.

As to claim 2, the method of Iijima '611 teaches that the reactor is a pipe (see column 2, lines 39-42) having water injected into the pipe (see column 8, lines 61-65) and the carbon dioxide hydrate product is discharged from the reactor (see column 2, lines 46-47).

As to claim 4, the Iijima '611 provides a means for controlling the flow rate of carbon dioxide and water (see column 11, lines 2-4, which discuss flow rates thereby implying that a means for control rate is provided). The Iijima patent also discloses both a temperature and pressure control means (see Figure 10 and column 11, lines 50-55).

As to claim 6, Iijima '611 discloses a pump (for water) with a flow controller (see Figure 6 and column 9, lines 18-21 and lines 28-31, wherein the pump itself serves as the flow controller).

As to claim 9, Iijima '611 discloses a driven propeller used to mix the carbon dioxide and water (see column 12, lines 13-17). As this propeller has blades and is driven, presumably by electrical power, for mixing, it meets all of the limitations of the claimed "electrically powered mixing blades."

As to claim 10, the Iijima '611 process forms a carbon dioxide hydrate (see Abstract, lines 14-15). No difference is seen as between this hydrate and the claimed "consolidated CO_2-hydrate/CO_2-liquid/water."

Claims 1, 2, 4, 6, 9 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Spencer 5,562,891.

As to claim 1, Spencer '891 teaches a method for producing hydrates, which comprises the steps of: delivering CO_2 to a pressurized, temperature-controlled, continuous-flow reactor (see Abstract lines 1-14 and column 5, lines 52-54 and see column 2, lines 46-59 demonstrating

that the reactor is able to control the temperature); delivering water to the reactor; mixing the CO_2 and water (see column 3, lines 27-34); and producing a carbon dioxide hydrate (see column 2, lines 46-47). As above, no difference is seen as between the carbon dioxide hydrate of Spencer '891 and the claimed "hydrate/fluid/water stream."

As to claim 2, the Spencer '891 reactor is a cylinder (see column 5, line 55). No difference is seen between the cylinder of Spencer '891 and the claimed "pipe." Further, Spencer '891 provides for removal of the hydrates through a conduit (see column 6, lines 2-3).

As to claim 4, Spencer '891 provides a means for: controlling the carbon dioxide (see column 6, lines 10-12, wherein the conduit and compressor control the flow); controlling the water flow (see column 6, lines 21-23, wherein the pump controls the flow of water); controlling the temperature (see column 6, lines 27-32, wherein the refrigeration unit controls the temperature); and controlling the pressure (see column 6, lines 12-15, wherein the compressors control the pressure).

As to claim 6, Spencer '891 teaches a pump for water (see column 6, lines 21-24, wherein the pump itself is the flow controller).

As to claim 9, Spencer '891 provides an agitation means (see column 5, lines 63-65), which appears to be a set of blades (see Figure 3), presumably the agitation means is electrically powered. Further, the "hydrate precursor" of Spencer '891 contains water as discussed in the Abstract. As such, Spencer '891 discloses the claimed "electrically powered mixing blades" for mixing the hydrate forming species and water.

As to claim 10, Spencer '891 produces a carbon dioxide hydrate (see claim 4, column 7, line 37 – column 8, line 3). As in claim 1, no difference is seen as between the carbon dioxide hydrate of Spencer and the claimed "consolidated CO_2-hydrate/CO_2-liquid/water."

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 3, 4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iijima '611 in view of Ohsol 5,738,762.

The rejection of claims 1 and 4 above are incorporated herein.

As to claims 3 and 8, Iijima '611 does provide for adequate mixing of the carbon dioxide and the water, although the reference does not disclose the use of static mixer blades. However, Ohsol '762 does use "static mixer blades" (baffles) for mixing in its process (see column 4, lines 39-43). It would have been obvious to one of ordinary skill in the art at the time of this invention to use static mixer blades in order to adequately mix the carbon dioxide and the water, while minimizing system complexity. Therefore, the addition of the baffles (static mixer blades) of Ohsol '762 to the Iijima method is of no patentable weight.

Claims 1, 3, 4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over '891 Spencer in view of Ohsol '762.

The rejection of claims 1 and 4 above are incorporated herein.

As to claims 3 and 8, Spencer '891 does provide for adequate mixing of the carbon dioxide and the water, although the reference does not disclose the use of static mixer blades. However, Ohsol '762 does use "static mixer blades" (baffles) for mixing in its process (see column 4, lines 39-43). It would have been obvious to one of ordinary skill in the art at the time of this invention to use static mixer blades in order to adequately mix the carbon dioxide and the water, while minimizing system complexity. Therefore, the addition of the Ohsol '762 baffles (static mixer blades) to the Spencer method is of no patentable weight.

Claims 1, 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iijima '611 in view of Satek 4,913,886.

The rejection of claims 1 and 4 above are incorporated herein.

As to claim 5, Iijima '611 does not disclose the use of a mass flow controller to control the flow of carbon dioxide. Satek '886 does use a mass flow controller to control the flow of the feed mixture (see column 15, lines 1-2). It would have been obvious to one of ordinary skill in the art at the time of this invention to add the mass flow controller of Satek '866 to the Iijima method in order to more precisely control the flow rate to the process for better overall quality.

Claims 1, 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spencer '891 in view of Satek 4,913,886.

The rejection of claims 1 and 4 above are incorporated herein.

As to claim 5, Spencer '891 does not disclose the use of a mass flow controller to control the flow of carbon dioxide. Satek '886 does use a mass flow controller to control the flow of the feed mixture (see column 15, lines 1-2). It would have been obvious to one of ordinary skill in

the art at the time of this invention to add the mass flow controller of Satek '866 to the Spencer method in order to more precisely control the flow rate to the process for better overall quality.

Claims 1, 4 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iijima '611 in view of Allen 5,426,137.

The rejection of claims 1 and 4 above are incorporated herein.

As to claim 7, Iijima '611 does not disclose a jet pump to control the water flow. However, Allen '137 does disclose the use of a jet pump in a similar method. It would have been obvious to one of ordinary skill in the art at the time of this invention to use the jet pump of Allen '137 in place of the regular pump of Iijima '611 in order to provide for additional mixing. As discussed in Allen '137, a jet pump "contributes to the mixing of water with the mixture because of the high energy at which the jet pump injects water into the mixture (see col. 14, lines 50-53).

Claims 1, 4 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spencer '891 in view of Allen '137.

The rejection of claims 1 and 4 above are incorporated herein.

As to claim 7, Spencer '891 does not disclose a jet pump to control the water flow. However, Allen '137 does disclose the use of a jet pump in a similar method. It would have been obvious to one of ordinary skill in the art at the time of this invention to use the jet pump of Allen '137 in place of the regular pump of Spencer '891 in order to provide for additional mixing.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rebecca M. Stadler whose telephone number is 571-272-5956.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

rms

STUART L. HENDRICKSON
PRIMARY EXAMINER